COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

TOWN OF FRAMINGHAM V. TOWN OF ASHLAND	)	
REQUEST FOR DETERMINATION OF RATES APPLICABLE TO TRANSPORTATION AND TREATMENT OF SEWAGE PURSUANT TO INTERMUNICIPAL AGREEMENT	)	**D.T.E. 02-46**

INITIAL BRIEF

OF THE

TOWN OF ASHLAND

REQUEST FOR DETERMINATION OF RATES APPLICABLE TO TRANSPORTATION OF SEWAGE PURSUANT TO INTERMUNICIPAL AGREEMENT

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SUBJECT INDEX

1. INTRODUCTION AND PROCEDURAL HISTORY

On December 9, 1963, the towns of Framingham and Ashland, pursuant to St. 1946, c. 86 §1, as amended by St. 1960, §406, §1, entered into an Intermunicipal Agreement (the "IMA") providing for Ashland's use of Framingham's sewerage facilities. Exh. FR-14.

The IMA permitted Ashland to discharge sewerage into the Framingham system at a:

> maximum rate of **2.0 million gallons per day (or 1400 gallons per minute)** of Ashland sewerage with the exception that **momentary discharge rates not exceeding 2.5 million gallons per day (or 1750 gallons per minute) for periods not in excess of five minutes are permissible**, unless and until changed by agreement of the parties. Id. (emphasis added)

The IMA provided that Ashland would make the following annual payments to Framingham for use of its sewerage facilities:

a. an annual payment of $3,000 for use of a connection at the Farm Pond interceptor, such usage not to exceed a maximum rate of discharge of 1400 gallons per minute plus an additional annual charge of $2,000 if Ashland's average daily flow exceeded one million gallons; and

b. An annual payment of $2,500 for use of a connection at the Bates Road sewer, such usage not to exceed a maximum rate of discharge of 200 gallons per minute. Id.

The IMA also provided that Ashland would indemnify and hold harmless Framingham from:

> any and all increased charges levied against the Town of Framingham, if any**, by the Metropolitan District Commission** as a result of the Town of Framingham having permitted the said Town of Ashland to use its sewer trunk-lines to discharge sewerage from the Town of Ashland into the lines of the said Metropolitan District Commission. Id. (emphasis added).

The IMA also provides that Ashland's:

> all annual payments made for the use of the Town of Framingham system are intended and do include payment for a proportionate share of the Town of Framingham's capital investment cost of said system, in addition to a fair and equitable proportionate share of the actual cost of the maintenance of said system and that **after payments by said Town of Ashland for thirty years, full payment for its proportionate share of investment costs shall have been made**, and that **thereafter any and all payments to said Town of Framingham shall be for a proportionate share of the cost of maintaining said system only**, . . . Id. (emphasis added)

The IMA further provided that the annual charges and permissible discharge levels set further above would be reviewable every five years. Id.

From December 1963, the effective date of the IMA, to December 31, 2000, Framingham sent invoices to Ashland in the total amount of $198,000 ($5,500/year) for thirty eight years (until 2001) for the usage of Framingham's sewerage system. Ashland paid Framingham in full and Framingham accepted payment without reservation for these invoices.

Beginning in 1998, Ashland and Framingham met on numerous occasions to discuss possible revisions to increases in the gallon limit of Ashland's sewage discharge. In the course of these discussions, Framingham's Department of Public Works and Water and Sewer Superintendent, Bill Skinner faxed two documents, October 21, 1998 and January 30, 1998 (Exh. ASH-10 and 11)**,** which included formulas for determining rate increases. The formula contained in the October 21, 1998 transmittal was as follows:

1) **Ashland's % of inch-miles of Shared Pipe in comparison to the inch-miles in Framingham's system (3.038%)** X

2) **Ashland's % of the Shared Pipe Capacity according to the Interbasin Transfer Allocation ("IBT")[1] (12.260%)** (this assumed Ashland's IBT of 3.2 million gallons per day (mgd) and Framingham's IBT of 25.39 mgd) X

3) **O&M costs of $4,957,656** (excluding the MWRA pump station labor/maintenance and replacement) =

TOTAL= Ashland's Share of Costs = $18,983 - Exh. ASH-10.

Unfortunately, however, these talks stalled because Framingham suffered from significant personnel turnover from 1998 until early 2000. Framingham was not able to devote sufficient resources toward resolving the gallon increase issue nevermind initiating discussions about revisions to the sewerage charges and rates issue. It was not until May 2000 when Framingham's new Town Manager, George King, initiated discussions about revisions to the sewerage rate and charges.

In the spring of 2001, Framingham retained SEA Consultants, Inc. to perform a Sewer Rate Assessment Study. Exh. FR-2. Based on the following formula but without providing support for the components of the formula, SEA determined that Ashland should compensate Framingham in the amount of $203,000 annually. This formula differs markedly from the formula Framingham proposed in 1998 in that it assumes that Ashland's flow travels throughout Framingham's system and does not use inch-miles to account for pipes Ashland actually uses.

$$\frac{\text{Ashland Flow = 0.77}}{\text{(Framingham Flow (8.023) + Ashland Flow (0.77)}} \text{ X Framingham O\&M Costs ($2,316, 814)}$$

[1] The IBT ratio signifies the maximum sewerage flow each town is permitted under the IBT to transfer to the MWRA.

Based on this determination of Ashland's cost, in June 29, 2001, Framingham sent Ashland a bill in the amount of $101,500 for the six months of usage between January 1, 2001 and June 30, 2001. On December 12, 2001, Framingham sent Ashland a bill in the amount of $101,500 for the six months of usage from June 30, 2001 to December 12, 2001. On June 12, 2002, Framingham sent Ashland a bill in the amount of $101,500 for six months of usage from January 2002 and ending on June 30, 2002. Per above, because Ashland disputed these invoices and because the IMA was not ripe for re-negotiation according to its "five year" terms, Ashland continued to compensate Framingham in the amount of $5,500 on December 12, 2001 and on June 12, 2002 in accordance with the IMA. Exh. DTE A-2-5.

In June 2001, Ashland retained its own consultant, Vollmer Associates, LLP ("Vollmer") to review and analyze SEA's study and to provide a response. Exh. ASH-4. As part of its response drafted on November 6, 2001, Vollmer agreed with the components of the formula provided by Framingham in its 1998 submission to Ashland and proposed the following formula ("Ashland's original formula"):

Percentage of Ashland's Usage of Inches-Miles of Framingham System Sewerage Pipe

(3.04%) X

Ratio of Ashland's InterBasin Transfer allocation (3.20 MGD) X
Framingham's (28.35 MGD) X

Framingham's O&M cost (FY 2001 Budgeted) ($2,853,992)

Id.

It is important to note that Vollmer used the IBT ratio as used by Framingham in 1998 because Framingham's actual flows in the Shared Pipeline were not known at that time.

On August 8, 2002, Framingham filed a petition with the Department of Telecommunications and Energy ("Department") requesting that the Department make a determination of rates applicable to the transportation of sewerage pursuant to the IMA.

Beginning in approximately February 2003 until March 11, 2003, the parties met with the Department's Settlement Staff to attempt to resolve this matter but were unable to do so. It is important to note that Ashland continued to meet with Framingham even after Framingham gave giving written notice to Ashland on February 14, 2003 that Framingham intended as of December 8, 2003 to terminate the transport of Ashland sewage. Exh. ASH-24. Framingham stated that it would not agree to renew the IMA or abide by the IMA's terms as of December 8, 2003. Framingham advised Ashland to make alternative arrangements to transport its sewage from Ashland to the Framingham Extension Relief Sewer located on Arthur Street in Framingham effective December 8, 2003. Ashland has made clear, in response, that while Ashland objects to Framingham's threat, Ashland is not intimidated by it and it will make other sewerage alternatives if necessary. Further, if Framingham were to take this reckless and ill-advised step, Ashland will not hesitate to appeal immediately to the Department of Environmental Protection and other relevant entities to hold Framingham and its officers directly responsible for any resulting damages.

On February 28, 2003, the Department issued an Interlocutory Order on the Scope of Proceeding which confirmed that the Department was prohibited from making any ruling regarding retroactive ratemaking. Further the Order confirmed that the Department's jurisdiction over the dispute arose solely out of St. 1946, c.86, §1, as amended by St. 1960, c. 406, §1 ("Special Act"). That Special Act, according to the Department, did not confer to the Department general regulatory authority over rates, terms and conditions pertaining to

Ashland's use of Framingham's sewerage system. The Department also concluded that the "only express condition in the contract that would terminate each party's obligations under the IMA is Ashland's direct entry into the MWRA system." Given that that this condition has not occurred, the "performance of each party's obligations under the IMA has not been excused." The Department also concluded that "neither party was in a position to engage in good faith negotiations about the proper and just sum to be paid" until at the earliest spring 2001. As such, the Department held that "Ashland had no duty to renegotiate the charges for the period beginning December 9, 1998 through December 8, 2003." Further, the Department ruled that ". . . the charges for that period [1998- 2003] and any prior period are not reviewable. . . . the reviewable matters in dispute are the charges applicable beginning on December 9, 2003 and the method of determining 'a proportionate share of the cost of maintaining [Framingham's] system."

The parties then continued to proceed in preparing and participating in the hearing regarding this matter.

2. ASHLAND'S PROPOSED FORMULAS

2.A. Operation & Management Cost Formula ("O&M")

In the process of determining the appropriate sewerage rates Ashland should be charged, the parties have exchanged and presented a substantial amount of information since August 8, 2002 when Framingham first brought its petition before the Department. As a result, the parties have modified and refined their original positions and have added alternatives.

Ashland's proposed formula for purposes of this Brief is still very much in alignment at its premise with the formula Ashland originally proposed by Framingham in 1998, by Vollmer in November 2001 and later in various information requests. At its premise, the formula looks at

the amount of Framingham pipeline Ashland actually uses (the "Shared Pipes"), the amount of flow of each of the towns that could go through these Shared Pipes and the Operation &Management ("O&M") cost. The formula Ashland presented in its Answer was:

Ratio of Ashland's InterBasin Transfer Allocation **X**
Framingham's InterBasin Transfer Allocation

Percentage of Ashland's Usage of Inch Miles of Framingham Sewerage Pipe (Shared Pipe)

X

Framingham's O&M cost[2]

Per the above formula, Ashland utilized a ratio of the maximum amount of sewage each town was permitted to discharge according to the IBT. Ashland used this ratio because while Ashland knew the amount of Ashland's flow through the Shared Pipes, Ashland did not know the amount of Framingham's flow through the Shared Pipes. The IBT ratio was the next best alternative to the measurement of actual flow of the towns through the Shared Pipes. At the time Ashland presented this formula, neither town had proposed metering Framingham's flow in the Shared Pipes and it did not appear to be a possibility.

Ashland's formula was unlike Framingham's formula which looked at the ratio of Ashland flow through the Shared Pipes and Framingham's flow throughout the town of Framingham multiplied by the O&M cost of the entire town. Framingham's formula assumed that Ashland's flow traveled throughout Framingham's system when, in fact, Ashland's flow only travels through the Shared Pipes. Framingham's formula failed to utilize an inch-mile element to address the fact that Ashland's flow only travels through the Shared Pipes.

[2] The first two components of this formula, flow and inch-miles components, were reversed for ease of reading. The Answer has the two components in reverse order to what is written above.

2.A.1) O&M Cost Formula - Considering the Shared Pipes as a Whole (Non-Segmented)

The following is a description and analysis of each component of the O&M formula.

2.A.1.i) O&M Cost Formula – Flow Component in Shared Pipes

As a result of all the testimony, Ashland still supports the usage of the IBT ratio component of its original formula as a perfectly reasonable way of addressing the flow of each of the towns through the Shared Pipes. Ashland, however, agrees that actual metering of flow is equally useful.

The numerator of the flow component signifies Ashland's flow through the Shared Pipe. Ashland contends that there is no need to install any additional meters to determine Ashland's flow. The MWRA meters currently in place have been relied upon by the MWRA, Ashland and Framingham for years to determine annual average discharge from the pump stations and have been deemed reliable and sufficient. The MWRA meter at Chestnut Street Pump Station is located at the Parshall flume in the inlet channel inside the station. The MWRA meter at Brackett Road Pump Station is located at the intersection of Douglas Street and Brackett Road in a manhole inside a 12" sewer upstream of the station. Ashland would be willing to comply with the letter of the IMA requirement that it install a Parshall flume device at the Chestnut Street Pump Station. As there is currently a Parshall flume device in place at the discharge point on Bates Road, there is no need to install a Parshall flume device there.

The only reason to install additional meters to determine Ashland flow instead of using the existing MWRA meters would be to capture any infiltration and inflow into Ashland's discharge lines. The pipe leaving the Brackett Road Pump Station is a 6" force main. This is a pressurized line. Because it is a pressurized line, there is no infiltration into that line. In the engineering profession no allowances are made in designing force mains for infiltration. The

force main from the Chestnut Street Pump Station, a 16" force main, is also pressurized line and would also not be subject to any infiltration. The other segment of the discharge line from Chestnut Street Pump Station is an 18" gravity sewer which has been substantially rehabilitated in the past two years. Ashland replaced this sewer in 2001 with one whose alignment eliminated the prior siphon and sharp bend that restricted flow. As is routine when installing sewers, the new pipe was pressure tested. The pressure test indicated that there were no leaking joints. Therefore, that there is virtually zero infiltration in that gravity line section. The Chestnut Street force main was also pressure tested at that time and found to be leak free.

The denominator in the flow component of the O&M formula is Framingham's flow through the Shared Pipe. Throughout the hearing there was discussion of how and where to meter to determine Framingham's flow contribution to the Shared Pipes. During the June 19, 2003 hearing date, Framingham proposed installing as many as 20-30 meters at a cost of millions of dollars annually. (June 19, 2003 Transcript, p. 157, lines 3-15). The purpose of these meters would be to determine Framingham flow in each interconnection or pipe segment and for allegedly determining how much of each town's sewage flows into the parallel or overflow pipes. As an alternative to metering to determine Ashland flow into the parallel and overflow pipes (but not presumably for determining Framingham flow through the Shared Pipes), Framingham proposed that if they were to "measure flows during certain precipitation (wet weather) events and then through computer modeling, [they would be] able to basically simulate other frequency of storm events and be able to come up with some statistical calculation." (July 16, 2003 Transcript, p. 252, lines 11-17). The measurements for the input into this hypothetical computer model would require metered flows by temporary meters which could be used to "maybe . . . meter flows over . . . several months or a year's period of time, to sort of capture

high-groundwater conditions coincident with heavy precipitation, melting snows." (July 16, 2003 Transcript, p. 252, 253, lines, 22-24, 1-4). Framingham likewise estimated the cost to meter this way to be in the range of several hundred thousand dollars. (July 16, 2003 Transcript, p. 254, lines 5-10). Because this "computer model" would not capture Framingham's flows through the Shared Pipes but would only address Ashland's alleged usage of the parallel and overflow pipes, this methodology would be lacking by definition. Further, Ashland has no idea what this computer model would look like and what data exactly it would analyze nor has it had the opportunity to cross-examine Framingham on such a model. In addition, this computer modeling, like the 20-30 meters proposed, would be exorbitantly and disproportionately expensive for the purpose it was aimed to achieve. For these reasons, Ashland focused on determining a more cost-effective reasonable and realistic solution to this dilemma. As a result, Ashland proposed using a house count formula to determine Framingham flow. Ashland proposed using Framingham water records as a check on this formula.

However, late in the day of the September 23, 2003 testimony, Framingham for the first time proposed using only one meter instead of twenty to thirty meters. (September 23, 2003 Transcript, p. 849, lines 3-21). Framingham contended that it would only need one meter to determine Framingham tributary flow to the Shared Pipes instead of the numerous meters referenced in their July and August testimony. Id. In Framingham's July 16, 2003 testimony, Framingham stated that approximately 60 percent of Framingham's sewerage system is tributary to the Shared Pipes. (July 16, 2003 Transcript, p. 209-210, lines 21-24, 1) Ashland has confirmed this approximation through independent means. Ashland is in agreement with Framingham's proposal to install one meter near the Arthur Street Pump Station to measure Framingham's flow which is tributary to the Shared Pipes. Per the September 23, 2003

testimony, Framingham has proposed installing a meter at a location near the Arthur Street Pump Station upstream from the juncture where Speen Street/Saxonville flow is introduced because the Speen Street/Saxonville flow is the 40% of the Framingham tributary area that is not tributary to the Shared Pipe. (September 23, 2003 Transcript, p. 868, lines 6-19). This new meter would record the total flow in the Shared Pipe including the 60% of Framingham's total sewerage flow that was tributary to the Shared Pipe but excluding the 40% of Framingham's total flow which was not tributary. Framingham's flow in the Shared Pipe would be determined by subtracting Ashland's flow (recorded by the MWRA meters at the Chestnut Street Pump Station and at the Brackett Road Pump Station) from the total recorded flow.

In light of this, the flow component of the O&M formula would be as follows:

Ashland Flow

Ashland Flow + (0.60) Framingham Flow

2.A.1.ii) O&M Formula - Inch-Mile Component

The inch-miles of Shared Pipe component should also be added to the formula to determine O&M costs because without it, the formula would assume that Ashland's sewage flows throughout Framingham's entire sewer system which it does not. The formula should reflect that Ashland's sewage only flows through the Shared Pipes and no where else. Given the new confirmed information that only 60% of Framingham's flow is tributary to the Shared Pipes, the denominator of the inch-mile ratio should be adjusted. Thus, the inch-mile ratio should of be the Shared Pipes that Ashland actually uses over the total inch-miles in the tributary area as opposed to over the total inch-miles in the entire Framingham system.

The inch-mile component of the O&M formula would now look like:

Inch-miles of Pipeline used by Ashland (Shared Pipes)
Inch-Miles of the 60% Tributary Area (including Shared Pipe inch-miles)

Of course, it is important to note that if the total inch-miles are adjusted to reflect only those pipes which are tributary to the Shared Pipes, the total O&M should be adjusted to reflect only those O&M costs attributed to that 60% tributary area.

2.A.1.ii.a) O&M Cost Formula – Inch-Mile Component –Dry Weather Pipeline

There has been significant testimony as to which are the Shared Pipes. Ashland is willing to concede the "dry weather" pipes outlined in Framingham response to the DTE -Record Request 8 are Shared Pipes. This is even though Framingham has not provided sufficient support to show that the 900 feet of 18" parallel pipe from Eames to Beaver Street is actually Shared Pipe.

2.A.1.ii.b) O&M Cost Formula – Inch-Mile Component - Wet-Weather Pipeline

Ashland does disagree, however, with any contention that Ashland shares any "wet-weather" pipes. These pipelines have also been referred to as parallel pipes and overflow pipes in Framingham's response to the Department's Record Request 8. In the course of the more than a year of this proceeding, Framingham has only been able to point to four periods or a total of fourteen days over the course of a forty year period (14,600 days) where Ashland has allegedly exceeded those amounts permitted under the IMA. Those periods are 12/17/96-12/21/96, 4/23/00- 4/29/00, 3/30/03 and 4/12/03. These are Exh. FR-19, Exh. FR-ASH 2-5, Exh. FR-45 and Exh. FR-46 respectively. Below Ashland will explain why the conclusions that Framingham drew from these charts is unsupportable. As a result, Framingham has no evidence that Ashland exceeded the IMA. And even if Ashland did exceed the IMA, the solution to that is

relatively simple. The solution is to either increase the IMA limit or penalize Ashland when in the very few instances it actually exceeds the IMA.

However, even if Ashland exceeds the IMA on rare occasions, Framingham has not proven that Ashland caused any surcharge in the Framingham pipes. Framingham has shown through Exh. FR- 45 and Exh. FR-46 (3/30/31 and 4/12/03 spikes respectively) that the Framingham pipes containing both Ashland and Framingham flow surcharged. However, there is absolutely nothing in Exh. FR-45 and Exh. FR-46 that show that Ashland and not Framingham was the cause of any such surcharge.

Contrary to those exhibits, Exh. FR-19 and Exh. FR-ASH 2-5 (which show the periods 12/17/96-12/21/96 and 4/23/00-4/29/00) show ONLY Ashland flow. Exh. FR-19 and Exh. FR-ASH 2-5 do not show in any way that the Framingham pipes overflowed. In fact, Exh. ASH-21 shows that the capacity of pipe segments which are after the Chestnut Street and Brackett Road Pump Stations pipes are plenty large enough to handle Ashland's flow. For example, even if Ashland were pumping its maximum from the Chestnut Street Pump Station, 2.53 mgd, the 36" Farm Pond Interceptor has a capacity of 9.24 mgd. Exh. ASH-25, Haley and Ward, Inc. Sewerage Facility Report for Ashland, 5-8. Exh. ASH-21. Likewise, even if Ashland were pumping the maximum its pumps could handle from the Brackett Road Pump Station, 0.374 mgd, the 18" gravity line has a capacity of 2.36 mgd. Exh. FR-ASH 2-9., Exh. ASH-21. Exh. ASH-25, 5-13. Both these pipes are more than sufficient to handle a small amount of overflow in excess of the IMA.

It is important to note that during all of the four periods referenced, there was significant (more than an inch) of rainfall that subjected the sewer system to infiltration and inflow. In the five days prior to December 16, 1996, 1.08 inches of rainfall was reported. Exh. ASH -26,

Massachusetts Department of Environmental Management Division of Water Resources (MDEM) Data for December 1996; Exh. ASH -27, National Weather Service data for December 1996. During the time period of December 16 – 21, 1996, the MDEM reported 1.47 inches of rainfall. Exh. ASH-26; Exh. ASH-27. And in the five days prior to December 16, 1996, the MDEM reported 1.08 inches of rain. Exh. ASH-26; Exh. ASH-27. During the period 4/23/00-4/29/00, the National Weather Service reported 3.64 inches of rain. Exh. ASH -28, NOAA Climatological Data, April 2000; Exh. ASH -29, National Weather Service Data, April 2000. For March 30, 2003 and April 12, 2003, the National Weather Service reported 1.3 inches and 1.27 inches of rain fall respectively. Exh ASH-27; Exh. ASH-28. On March 30, 2003, it is estimated that 1.05 inches of rain fell with 0.92 falling the day before. Exh. ASH -30, MWRA Rain Gauge Reports for March 29, 2003 and March 30, 2003. There is another estimate that even as much as 1.30 inches of rain fell on March 30, 2003 and that there was "heavy rain" during this time period. Exh. ASH-31, National Weather Service Data for March 2003. Similarly, on April 11, 2003, it has been reported that 1.27 inches of rain fell. Exh. ASH-32, National Weather Service Data for April 2003.

Exh. FR-19 and Exh. FR-ASH 2-5 show several instances where Ashland's flow allegedly exceeded the IMA. Both of these charts show only Ashland flow and not the combined flow of both towns. The data was taken from the Chestnut Street Pump Station for both Exh. FR-19 and Exh. FR-ASH 2-5. Sewage flow data for Brackett Road Pump Station appears only in Exh. FR-ASH 2-5. It is important to note that both these exhibits show ONLY Ashland's flow. These charts do not show combined Ashland and Framingham flow. These charts do not demonstrate in any way that there was surcharging of any pipes.

Framingham Exhibit 19 – Chart 12/16/96 – 12/21/96

The above measurements indicate that Ashland exceeded the 2.0 mgd maximum rate of discharge according to the IMA on nine occasions during this period. We believe that this information is likely overestimated. The flow data is estimated based on elapsed time meter records and the rated capacity of each pump. The flow data is overestimated when multiple pumps operate at the same time because each pump does not operate at its rated capacity.

The above measurements also indicate that Ashland exceeded the 2.5 mgd momentary maximum discharge rate on eleven occasions. However, because the pumps at Chestnut Street Pump Station can only pump 2.53 mgd according to the Haley & Ward Sewerage Facility Report, it would have been impossible for the Chestnut Street pumps to pump any amount in excess of 2.53. The explanation for how the chart could show flows in excess of 2.5 mgd given that the Chestnut Street pumps could not pump that much is as follows. This chart records flow from the Parshall flume which is located prior to the pumps in the Chestnut Street Pump Station. The figures showing flow in excess of 2.53 mgd are likely in error because when the Parshall flume is flooded it cannot measure accurately. Measurements in excess of 2.53 by the Parshall Flume do not mean that the pumps pumped that amount. If there were flows in excess of 2.53 mgd, then those flows would back up into Ashland not Framingham. It is only possible for Ashland's pipes to surcharge in that event and not Framingham's. Flow at this point would back up into Ashland. Note that this discrepancy will no longer be an issue in the near future because the pumping capacity was increased in 2001 to 3.17 mgd and the variable speed drives that were installed at that time are designed to meet the incoming flow. In that the highest cited flow since December 1996 was 2.7 mgd, the Chestnut Street Pump Station has ample capacity to handle

flow in excess of that amount. As a result, it is highly unlikely that the Parshall flume would ever flood again.

Exh. FR-ASH – Chart 4/22/00 – 4/27/00

The same analysis per above applies to the Chestnut Street Pump Station measurements recorded in this chart as well. This data was likewise taken from the Parshall Flume and is likewise not reliable at high flows. With regards to the Brackett Road Pump Station, the IMA permits Ashland to discharge a maximum of 0.288 mgd. It appears from the data collected above that Ashland's flow exceeded this maximum on three occasions. However, it is likely that this data suffers from the same inaccuracies as the data collected regarding the Chestnut Street Pump Station. As evidence, while the measurements state that 0.375 was pumped, we know that the maximum the Brackett Road Pump Station can pump is 0.374 mgd. Exh. ASH-32.

Exh. FR-45 and Exh. FR-46 allegedly show surcharging from flow by both towns. While these charts may show surcharging (and Ashland doubts the data shown for various reasons below), the charts do not show whether it was Ashland or Framingham who caused the surcharging and in what amounts.

Exh. FR-45 shows combined flow for both towns in two of the three meters shown. The two meters which show combined flow are meters 29 (blue line) and 30 (red line). These two lines for meters 29 and 30 are the top two lines on the graph. These meters are located downstream of Brackett Road Pump Station. While meters 29 and 30 do show surcharging, the meters show the combined flow of both towns. There is absolutely no evidence that Ashland caused the surcharging. Only the third line, meter ASFR2 indicated in yellow, which is located in the 12" pipe upstream shows a surcharge on 3/30/03, 4/12/03 and 4/13/03. But ASFR2 is located before the Brackett Road Pump Station and records only Ashland flow. It is important

to realize that any surcharge would back into the Ashland system not Framingham's because the meter is located before the Brackett Road Pump Station. In sum, Framingham has not shown surcharging in the pipes containing combined flow and has not shown that Ashland was the cause of such overflow. And even in the instance where Framingham has shown surcharging, because the location of pipe was prior to the pump, any surcharging would have been backed up into Ashland.

Exh. FR-46, also shows two spikes where the flow from the meters in the exhibit surcharged. It is important to note that the flow through all four of the meters in the key contain combined flow from both towns. There is absolutely no evidence that Ashland caused the surcharging. The ASFR1 + ASFR2 referenced near the top of the chart does not refer to any of the meters in the legend. ASFR1+ ASFR 2 refers to an average flow from Chestnut Street and the meter located at Douglas Road which is near the Bracket Road Pump Station. In essence, it refers to solely Ashland flow. Framingham has stated on Exh. FR-46 that Ashland's flow is 2.51. For the sake of argument, Ashland does not dispute this figure. The combined IMA limit is 2.29 mgd. This is a difference of 0.22 mgd which Ashland contends is negligible considering the size and capacity of the adjacent pipes. Even if Ashland exceeded the IMA by some miniscule amount in comparison to the pipe capacity, this is no evidence that Ashland caused the pipes to surcharge.

In fact, even if Ashland exceeded the IMA at the points referenced, it was very likely Framingham's flow which caused the pipe to surcharge. Exh. ASH-21 shows the capacity of all of the pipes referenced in the key of Exh. FR-46. The pink line in Exh. FR-46 represents meter 20. Meter 20 is a 42 inch pipe with a capacity according to Exh. ASH-21 of 12.51 mgd. If Ashland's flow was 2.51 mgd as indicated by Exh. FR-46 and if the pipe surcharged, then

Framingham's flow had to be well in excess of 10.00 mgd (12.51 mgd (pipe capacity)– 2.51 mgd (Ashland flow)). If any entity were to have caused the surcharge, it would be Framingham.

It is interesting to note that Framingham stated that its total flow for its entire system was 7 mgd. DTE-Record Request 6. Given that Framingham's tributary area is 60% of its entire system, Framingham's flow is therefore 4.2 mgd. Given this, during storm events, Framingham's flow must increase more than two-fold to achieve a flow of in excess of 10.00 mgd per above due to infiltration and inflow. This is not surprising because the average daily Framingham flows during these wet weather events as reported by the MWRA were 14.06 mgd on 3/30/03, 14.99 mgd on 3/31/03, 13.84 mgd 4/12/03 and 14.06 mgd on 4/13/03. Exh ASH -33, MWRA Data on Framingham Flow on 3/30/03, 3/31/03, 4/12/03 and 4/13/03. Note that the MWRA meter, FRNA1R, is located near Boden Lane, Burning Tree Road, Tamarack Road just over the town boundary line of Framingham in Natick. The purpose of this meter is to capture both Ashland and Framingham sewerage flow.[3] The MWRA then subcontracts Ashland's sewerage flows from the total figure to obtain Framingham flows. Id. In the average daily Framingham flow as reported by Framingham in Framingham's response to the to the DTE-Record Request 6 was 7.05 mgd in 2001, 6.55 mgd in 2002 and 7.66 mgd for the first six months of 2003. Because Framingham's flow varies so greatly from the average during the wet weather, this indicates that Framingham's system has significant infiltration and inflow. This gives further credence to Framingham's flow causing the Shared Pipes to surcharge.

Lastly, while Ashland has shown above that it is highly likely that the surcharges are caused by Framingham, it is important to point out that both of Exh. FR-45 and Exh. FR-46 are secondary sources manufactured by Framingham. Ashland has not been provided with any

[3] Note that the MWRA stated that it has no more official documentation of these measurements other than this Exhibit as provided.

primary source records which are the basis for these charts. Ashland has no way of confirming the information contained in Framingham Exh. 45 and 46 as these charts were extrapolations of primary source data.

2.A.1.ii.c. – Unsupported and Late Modification of Inch-Mile Data

In its September 23, 2003 testimony, Framingham attempted to modify the total of inch-miles of pipeline in the system. (September 23, 2003 Transcript, pp. 801-803, lines 15,24, 1-24, 1,2). Framingham contended that the 2,827 inch-miles of total pipeline in the Framingham sewerage system is now "approximately" 2,000 inch-miles. (September 23, 2003 Transcript, p. 803, lines 1-2). But this estimation is based on mapping and inventory which Ashland has not been privy to throughout this proceeding nor was Framingham positive about its 2,000 figure. In fact, Framingham stated that it "[could] not say that [the 2,827 figure was accurate," that the system was "not completely mapped at this point" and that the value is "considerably less than [2,827] right now." Id. at 802, lines 13-18. Framingham admitted that its analysis of the whole system has not yet been completed. Id. Framingham is providing a claim that the 2,827 figure is inaccurate after more than a year of proceedings and, in fact, presented this information on the last day of the fourth day of the hearing. Id. Framingham has provided absolutely no support for its claim that the 2, 827 inch-mile figure should be adjusted, has provided no assurances as to its accuracy and has not provided Ashland with the opportunity to examine the support for these contentions. Ashland rejects Framingham's attempts to adjust this figure at this late date and requests that the Department refrain from including any such adjustment in the inch-mile component of the formula.

Summary
O&M Costs Considering Shared Pipes as a Whole (Non-Segmented)

In sum, per above, Ashland is agreeable to utilizing one meter to determine Framingham's flow if only the dry-weather Shared Pipes which Framingham defined in its response to DTE-Record Request 8 are used in determining the inch-mile component for the Shared Pipes.

Ashland is agreeable to using the following O&M formula:

$$\frac{\text{Ashland Flow}}{\text{Ashland Flow} + \textbf{(.60) Framingham Flow}} \times \frac{\text{Inch-Miles of Pipeline Used by Ashland (Shared Pipeline)}}{\textbf{Inch-Miles of Pipeline in Tributary (60\%) area}} \times \textbf{(0.60)}\ \text{O\&M}$$

2.A.2) O&M Cost Formula on a Segmented Basis

There has also been significant discussion about the costs of the Shared Pipe varying by segments within the Shared Pipes as well as the differences in flow between the towns in each of the Shared Pipe segments. As a result, Framingham proposed that extensive metering, as many as 20-30 meters, be installed to determine the flows in each of those segments. (June 19, 2003 Transcript, p. 157, lines 3-15). Framingham intended that these meters would determine the flow into pipes adjacent to the Shared Pipes (parallel and overflow pipes) to determine when and if Ashland's flow actually flows into those adjacent pipes.

Both parties agree that some pipes may cost more than others. But that statement needs clarifying. An 8" pipe which is 500 feet long that needs repairing may be more expensive to repair than 3 feet of a 42" inch pipe. Framingham has contended that the location of pipeline is a factor because a pipeline located downtown will need police presence whereas a sidestreet or cross-country pipe would not. We contend that both a pipe located on a side street as well as a pipe located downtown would need police presence. While the parties agree the some pipes may cost more than others to repair, Ashland contends that the inch-miles measurement normalizes

the difference in sizes and lengths of the pipes so as to negate any such differences. The elements of determining inch-miles, namely diameter and length of pipe, neutralize those very aspects of the pipe that can cause the pipe to be more or less costly to maintain.

While metering at every segment may be a hyper-technically accurate way to determine the flow in each segment, the costs of installing and monitoring these meters would be so excessive and the data so time intensive to obtain and track as to outweigh any benefit to either town. Ashland has developed a reasonable cost-effective alternative based on accepted standards to achieve a comparable result as detailed below.

2.A.2.i) Flow Component Determined by House Counts

That reasonable cost-effective alternative is to use house counts instead of numerous meters. House counts would be applied to each segment to determine Framingham's flow in that segment. Per Exh. ASH-22 and per the September 23, 2003 testimony (pp 762- 774), the formula for each Shared Pipe segment would be as below. Each Shared Pipe segment would be cumulative. This formula is exemplified in Exh. ASH -22.

The following is the house count formula for the pipe segment from Farm Pond to Bishop Street. The same formula would apply to the adjacent section of Shared Pipeline, Bishop Street to Waverly Street, except that the total flow from the Farm Pond to Bishop Street section would be added as well and so on for Waverly Street to Beaver Street. A similar analysis would be applied for Bates Road to the Diversion Structure, the Diversion Structure to Beaver Street and from Beaver Street to Arthur Street. The costs for each segment would be added to achieve the total O&M cost due from Ashland. This formula has been modified in light of Framingham's testimony and Ashland's confirmation of the 60% of Framingham tributary flow to the Shared Pipe.

QA1 /QT1 X Inch- Miles for Shared Pipe Segment/Inch-Miles in 60% Tributary Area

X

(0.60)O&M cost

The above formula equates to Ashland flow/total flow through the pipe (Ashland's flow + Framingham's flow + Framingham's infiltration and inflow) X (the inch-miles in the Shared Pipeline/ total inch-miles in the entire Framingham system) X (60% of the O&M cost for the entire Framingham system).

The components of the formula would be defined as follows:

QA = The Chestnut Street Pump Station annual average daily flow from MWRA records

QT1 = QA1 + QF1 (see below) + QI/I (see below)

QF1 = The average daily flow based on the number of residences x number of bedrooms multiplied by 110 gallons per day (gpd) per bedroom. The source of this information is 310 CMR, State Environmental Code, Title 5: Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of on-Site Sewage Treatment and Disposal Systems and for the Transport and Disposal of Septage. As an example, if we were to assume 3,400 residences x 3 bedrooms per residence x 110 gpd/ bedroom =1,122,000 (1.12 mgd) of sewerage. Title 5 can be readily and simply applied to commercial and industrial entities as well. Framingham has stated in its September 23, 2003 testimony that Title 5 overestimates the typically emission of sewage. (September 23, 2003 Testimony, pp. 841-845) Ashland is perfectly agreeable to coming to a compromise on the Title 5 rates. Ashland proposes that the towns retain an independent consultant to collect data from Framingham regarding emissions of sewerage from a random number of houses, to review it and to adjust the Title 5 figures as is appropriate. Ashland also proposes that water records be used as a backup "check" on the house count

method to refine its accuracy. Framingham admitted in its own testimony that water records could be a useful source for flow information second to actual flows. (September 23, 2003 Transcript, p. 842, lines 5-13).

QI/I = the infiltration and inflow resulting in the segment. TR-16 Guides for Design of Wastewater Treatment Works, New England Interstate Water Pollution Control Commission, Page 2-2, Article 2.2.3.2., provides a recognizable standard for determining infiltration and inflow is 375 gpd /inch-mile of tributary sewer. DTE -Record Request 3. For example, 500 inch-miles at 375 gpd/inch-mile = 187,500 gpd (0.19 mgd). Of course, if Framingham were to be able to certify by an independent engineer that certain Shared Pipe segments had been rehabilitated and in what gallon amounts, then Ashland would agree that the infiltration and inflow assessment would be adjusted for those Shared Pipes. For example, assume an independent consultant performed rehabilitation work on a Shared Pipe segment. That consultant would be able to certify to Framingham that the work had been performed and that the infiltration and inflow had been reduced a specific number of gallons. Then Ashland would agree that the gallonage specified would be subtracted from the total infiltration/inflow number calculated. Given that contracts to perform infiltration/inflow take at least a year to design and construct, these projects would be documented in Framingham's program of construction and readily discernable for billing purposes.

2.A.2.ii) Implementing the "House-Count" Formula

In order for both communities to agree that the house counts were performed in an equitable manner, the initial determination should be performed by an independent consultant chosen by the parties. The initial determination according to our experts would be in the range of $10,000-20,000. The annual cost of updating this information would be in the range of

$2,000-3,000. Ashland contends that Framingham should assume this cost because Ashland is aware of its flow into the Shared Pipes and Framingham is not. In the interest of compromise, however, and because Ashland does obtain some benefit from this information, Ashland would agree to share in these costs.

Throughout the hearings, Framingham has stated that it would be exorbitant for it to keep track of O&M costs by Shared Pipes or by Shared Pipe segments. By using Ashland's formula above, Ashland has not required that the O&M cost be broken down by Shared Pipe or by Shared Pipe segment. Rather, Ashland is willing to make the assumption that the O&M costs for Framingham's tributary area to the Shared Pipes are relatively evenly distributed. By using a flow component and inch-miles component, Ashland tempers the usage of the O&M cost for the entire system and provides Framingham with the advantage of using the entire the O&M component for the tributary area.

2.B.) Capital Costs

It should be noted that according to the letter of the IMA, Ashland has no obligation to make payments for capital costs after payments have been made by Ashland for thirty years. Specifically, the IMA states:

> . . . after payments by said Town of Ashland for thirty years, full payment for its proportionate share of investment costs shall have been made, and that thereafter any and all payments to said Town of Framingham shall be for a proportionate share of the cost of maintaining said system only. . . Exh. FR-14.

Nevertheless, Ashland has agreed to be reasonable and has agreed to pay its fair proportion of capital costs.

Ashland proposes that the capital cost formula to determine the capital costs for individual sections of the Shared Pipe should be based on the ratio of the maximum capacity of

sewage permitted to be discharged by Ashland per the IMA divided by the capacity of the Shared Pipe multiplied by the capital cost generated for that Shared Pipe segment. The formula is as follows:

$$\frac{\text{Ashland's Maximum Capacity in mgd as Permitted by IMA}}{\text{Maximum Capacity in mgd of Shared Pipe affected}} \times \text{Capital Cost for Shared Pipe Affected}$$

The following is a description and analysis of each component of the formula to determine capital costs detailed above in 2.B.

2.B.1) Ashland's Maximum Capacity in Mgd as Permitted by IMA

The Ashland's maximum capacity will depend on the where the affected pipe is located. For example if the pipeline is located anywhere along the Farm Pond Interceptor Sewer until the point where it intersects with the Beaver Dam Interceptor Sewer the Ashland maximum capacity based on the IMA is 2.0 mgd. Whereas if any part of the pipeline along the Beaver Dam Interceptor Sewer upstream of the point where Farm Pond Interceptor Sewer and Beaver Dam Interceptor Sewer conjoin is affected, the Ashland maximum capacity per the IMA is 0.29/mgd. After the point where the two interceptor sewers conjoin, Ashland's maximum capacity will be a combination of these two maximums or 2.29/mgd.

2.B.2) Maximum Capacity in Mgd of Shared Pipe Affected

Ashland has calculated the maximum hydraulic capacity for each pipe segment. Exh. ASH -21. The flow capacities in each segment were determined using a derivation of the Manning's equation.[4] Because Ashland did not have the actual slope of each pipe segment, Ashland used the slope necessary to maintain the minimal velocity of two feet per second which

[4] ($V = (Q/A) \times (1.486/n) \times (D/4)^{2/3} \times S^{1/2}$ where V = 2.0 feet per second (the minimum velocity recommended by TR-16 for pipes flowing full, Q = the flow capacity of the pipe flowing full, A – cross-sectional area of the pipe, n =

within the industry is considered to be the velocity required for the pipeline to be self-cleansing. This is per TR-16 Guides for Design of Wastewater Treatment Works, New England Interstate Water Pollution Control Commission, Page 2-2, Article 2.2.3.2. DTE- Record Request 3. Ashland assumed the minimum slope so as not to disadvantage Framingham. If Ashland were to increase the slope, the capacity of the pipe segments would increase. As a result, Ashland's share of the capacity would decrease.

2.B.3) Specific Capital Cost Example

Ashland agrees with Framingham's definition of capital cost as one being in excess of $25,000 or if it adds five years of useful life to an asset. Assume that the 36" Farm Pond Interceptor were in need of a capital cost repair, we would first determine Ashland's maximum capacity along that pipeline. Per the October 7, 2003 Briefing Question posed by the Department, there would be no need to measure or meter flow otherwise. According to the IMA, Ashland's maximum discharge rate in the 36" Farm Pond Interceptor Sewers 2.0 mgd. Exh. FR-14. Next, it is necessary to determine the capacity of the 36" Farm Pond Interceptor itself. Per Exh. ASH- 21, Ashland has determined that the capacity for this pipeline is 9.24 MGD. Exh. ASH-21.

Assuming that the cost to repair is $25,500, the formula for determining Ashland's share of the capital cost for the 36" Farm Pond Interceptor would be as follows:

$$\frac{2.0 \text{ MGD}}{9.24 \text{ MGD}} \times \$25{,}500 = \$5{,}519.$$

The Department asked for an explanation of the appropriate measure of flow (e.g. average, peak, instantaneous peak), the raw data needed, whether it is currently collected or

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0.013 (coefficient of pipe friction recommended by TR-16), D = diameter of pipe flowing full, and S= minimum slope required to maintain a velocity of 2.0 feet per second.)

would need to be collected and estimate or new meters and methods and relevant time intervals or averaging periods. Per above, the measure would be based on the maximum discharge rate permitted of Ashland under the IMA over the maximum carrying capacity of the Shared Pipeline which was the subject of the capital cost.

Further, Ashland should have input and veto power over the spending for such projects. For example, Ashland should have veto power over Ashland's contributing to any project where the project was being performed solely or largely for the benefit of Framingham. If Framingham chose to replace a smaller pipe with a larger pipe because Framingham has approved a new development in the area, Ashland should not have to contribute to that cost. Once the decision was made to proceed, Ashland would not expect to have oversight over or participate in the work performed.

Capital costs by pipe segment are easy to track by Framingham's own admission. By Framingham's own admission in its testimony, in the case of a capital project, Framingham gets an appropriation from town meeting for a particular purpose. By definition, the expenditures posted against that appropriation are for that project as defined by the vote of town meeting. (September 23, 2003, pp. 782-783, lines 20-24, 1-12).

2.B.4.) Framingham's Capital Cost Formula

Framingham has stated that it would measure capital costs based on peak flows but in order to do this it would require numerous costly meters. Ashland's maximum flow for apportioning capital cost should be the maximum capacity of each pump station. The capacity of Chestnut Street Pump Station was increased from 2.53 mgd to 2.88 mgd in 2001. The new Brackett Road Pump Station will have greater capacity than its existing capacity of 0.374 mgd after construction is completed in 2004. An alternative to this is to establish the maximum flow

from each station based on MWRA metered flow records. It could be based on the average of the three highest recorded daily flows in a calendar year over the three years of record immediately preceding the capital cost or repair cost. Note that this is similar to language contained in the Wellesley-Newton IMA. Exh. DTE-3. This would be the capacity that would reserve for Ashland over the term of the new IMA. The recorded flows would be based on the existing MWRA meters. In that Wellesley-Newton uses average daily flow, Ashland is being more then generous to FRA by using IMA maximum flows. As for whether it is peak flow or maximum flow, it should be defined as the average maximum daily volume of flow that the stations pumped over the record period.

CONCLUSION

In conclusion, Ashland respectfully requests that the Department make a determination that Ashland compensate Framingham in accordance with the formulas outlined herein and supported by Ashland.

Respectfully submitted,

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Dated:_____

CERTIFICATE OF SERVICE

I, Maureen P. Hogan, hereby certify that on this ___ day of October 2003, I served the foregoing by mailing a copy first class, postage prepaid, to:

Christopher J. Petrini, Esq.
Erin K. Higgins, Esq.
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_____
Maureen P. Hogan

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